

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>11474p</b>	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. <b>PCT/DE2004/000801</b>	International filing date (day/month/year) <b>16.04.2004</b>	Priority date (day/month/year) <b>17.04.2003</b>
International Patent Classification (IPC) or national classification and IPC		
Applicant <b>X-FAB SEMICONDUCTOR FOUNDRIES AG</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☒ (sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:

☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒ Box No. I Basis of the report

☐ Box No. II Priority

☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

☐ Box No. IV Lack of unity of invention

☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☐ Box No. VI Certain documents cited

☐ Box No. VII Certain defects in the international application

☒ Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/DE2004/000801

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_ which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-9 \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. \_\_\_\_\_ as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* 1-16 received by this Authority on 07.04.2005 with letter of 06.04.2005
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- sheets 1/1 \_\_\_\_\_ as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☒ the claims, nos. 8 \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (specify): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-7, 9-16	YES
	Claims	-	NO
Inventive step (IS)	Claims	1-7, 9-16	YES
	Claims	-	NO
Industrial applicability (IA)	Claims	1-7, 9-16	YES
	Claims	-	NO

## 2. Citations and explanations (Rule 70.7)

**Box I:****Basis of the report**

The 15 claims filed with the letter of 06 April 2005 were numbered 1-7 and 9-16 by the applicant. Claim 8 was eliminated as a result of the amendments submitted by the applicant.

**Box V:**

## 1. Reference is made to the following documents:

- D1: PATENT ABSTRACTS OF JAPAN Vol. 0152, No. 41  
(E-1080), 21 June 1991 (1991-06-21) & JP 3  
076221 A (MITSUBISHI ELECTRIC CORP), 2 April  
1991 (1991-04-02)
- D2: PATENT ABSTRACTS OF JAPAN Vol. 2003, No. 05,  
12 May 2003 (2003-05-12) & JP 2003 017444 A  
(SUMITOMO MITSUBISHI SILICON CORP),  
17 January 2003 (2003-01-17)
- D3: US-B1-6 514 858 (MAUERSBERGER FRANK ET AL)  
04 February 2003 (2003-02-04)
- D4: US-A-6 156 621 (LEIPOLD LUDWIG ET AL)  
05 December 2000 (2000-12-05)

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
	D5: US-B1-6 242 320 (SO SANG MUN) 05 June 2001 (2001-06-05)
	D6: EP-A-1 366 860 (ASIA PACIFIC MICROSYSTEM INC) 03 December 2003 (2003-12-03)
2.	The subject matter of claims 1-7 and 9-16 appears to be novel (PCT Article 33(2)) and inventive (PCT Article 33(3)):
2.1	The application relates to a method for checking a reduction in thickness as per claim 1 and to a device for checking a reduction in thickness as per claim 10. It also offers an improved optical thickness check which is achieved by having strip trenches in the test structure, with a width that increases as the depth increases, thereby allowing an optical identification of the trench depth in a simple and precise manner.
2.2	The subject matter of claim 1 corresponds to the combined subject matter of original claims 1 and 8. The subject matter of claim 10 corresponds to the subject matter of original claim 10 in combination with the feature whereby "the trenches are strip trenches, with a width that oncreases as the depth increases", which was part of the original disclosure (see, for example, the drawings).
2.3	Document D1 (see abstract) discloses a method for checking a reduction in thickness using trenches of different depths. However, the trenches are not

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
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strip trenches, but have a tapered form. The argument put forward by the applicant, which can be accepted, is that this makes optical detection of an opening in the trench bottom more difficult, which is not the case with strip trenches. Furthermore, the wafer to be thinned in D1 is not bonded to a support wafer, unlike in claims 1 and 10.

- 2.4 Document D2 (see abstract and figures 2 and 3 of the JP document) describes a method for checking a reduction in thickness using holes of different depths. The mentioned feature whereby the depth of the holes increases as their width increases, is neither mentioned nor suggested here.
- 2.5 None of the documents D3 (see abstract; claim 1), D4 (see abstract) or D5 (see abstract and claim 1) contains anything to suggest to a person skilled in the art the idea of strip-like reference trenches in a test structure with a depth that increases as the width increases.
- 2.6 Document D6 (see figures 1 and 7) was published prior to the international filing date but after the claimed priority date. This document is not prejudicial to novelty for the subject matter of claims 1-7 and 9-16 because the disclosed reference trenches are not in the form of strips.

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. The claims are not clear (PCT Article 6).
- 1.1 Expressions placed between parentheses in claims (see claim 1, "the (active) wafer"), are unclear and lead to uncertainty with respect to the scope of protection provided.
- 1.2 Expressions recurrently found in the claims such as "more particularly", "or" and "in other words" reduce the associated features to purely interpretable and/or purely optional examples and/or explanations. Such examples and/or explanations can be used in the description, but not in the claims since they are misleading with respect to the scope of protection afforded.
- 1.3 The additional features of claim 2 appear to be redundant since claim 1 already states that there are defined differences between the depths of the trenches.
- 1.4 The additional features of claim 12 are already included in the corresponding independent claim 10. Claim 12 therefore appears to be redundant.
- 1.5 The question answered in claim 13 as to why the target thickness is desirable, i.e. whether it is a desired thickness or a specified thickness, is of no relevance from a technical point of view. The statements in claims 1 and 10 to the effect

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Box No. VIII      Certain observations on the international application

that this thickness is desired seems completely  
adequate.